



PATENT  
Attorney Docket No. 101.0056-03000  
Customer No. 22882

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re U.S. Patent of: )  
)  
Gary K. Michelson )  
) (Serial No.: 09/618,566)  
Patent No.: 6,592,586 )  
) (Filed: July 17, 2000)  
Issue Date: July 15, 2003 )  
)  
For: SINGLE-LOCK ANTERIOR )  
CERVICAL PLATING SYSTEM )

Certificate of Correction Branch  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Certificate  
AUG 08 2003  
of Correction

Sir:

**REQUEST FOR CERTIFICATE OF CORRECTION**

Pursuant to 35 U.S.C. § 254 and 37 C.F.R. § 1.322, this is a request for the issuance of a Certificate of Correction in the above-identified patent. Two (2) copies of PTO Form 1050 are appended. The complete Certificate of Correction involves two (2) pages.

The mistakes identified in the appended Form occurred through the fault of the Patent Office, as clearly disclosed by the records of the application which matured into this patent, and as evidenced in the attached copies of the following documents:


- Page 3 of Amendment dated August 29, 2002, showing the correct language of issued claim 5 (corresponding pending claim 286 );
- Page 12 of Amendment dated June 6, 2002, showing correct language of issued claim 69 (corresponding pending claim 599);
- Pages 3-4 of Amendment dated February 25, 2003, showing correct language of issued claim 148 (corresponding pending claim 678);
- Page 24 of Amendment dated June 6, 2002, showing correct language of issued claim 151 (corresponding pending claim 681);
- Page 26 of Amendment dated June 6, 2002, showing correct language of issued claim 164 (corresponding pending claim 694), and showing correct

dependency of issued claim 167 (corresponding pending claim 697);  
Page 27 of Amendment dated June 6, 2002, showing correct language of issued  
claim 171 (corresponding pending claim 701) and issued claim 173  
(corresponding pending claim 703);  
Page 5 of Amendment dated February 25, 2003, showing correct language of  
issued claim 183 (corresponding pending claim 713);  
Page 19 of Amendment dated August 29, 2002, showing correct language of  
issued claim 191 (corresponding pending claim 721) and issued claim 194  
(corresponding pending claim 724); and  
Page 20 of Amendment dated August 29, 2002, showing correct language of  
issued claim 202 (corresponding pending claim 732).  
Issuance of the Certificate of Correction containing the correction is earnestly  
requested.

Respectfully submitted,

MARTIN & FERRARO, LLP

Dated: July 31, 2003

By:   
Thomas H. Martin  
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said plate, said bottom surface configured to fit over the bone screw and bear against the bone screw, each of said locking elements having an outer perimeter contacting at least a portion of the perimeter of a respective one of said bone screw receiving holes, said locking elements each having a through-hole passing through said top surface and said bottom surface, said through-hole having a central longitudinal axis coaxial with a central longitudinal axis of a respective one of said bone screw receiving holes.

285. (Twice Amended) The plate system of claim 282 in which said plate has a length longer than a width, and said longitudinal concave curvature has a radius of curvature greater than 15 cm and less than 25 cm.
286. (Twice Amended) The plate system of claim 282 in which said plate has a length longer than a width.
287. (Twice Amended) The plate system of claim 282 in which said transverse concave curvature has a radius of curvature in the order of approximately 16 mm to 21 mm.
538. (Amended) A plate system adapted for use in the anterior human cervical spine for contacting the anterior aspect of at least two cervical vertebral bodies, said plate system comprising:

a plate having a longitudinal axis and a length sufficient to span a disc space and overlap portions of at least two adjacent cervical vertebral bodies, said plate having a lower surface for placement against the vertebral bodies and an upper surface opposite said lower surface, said lower surface being concave along a substantial portion of the longitudinal axis of said plate;

least a portion of said at least one upper facing surface of said bone screw, a lower surface opposite said upper surface, and a through-hole passing through said upper surface and said lower surface, said through-hole having a central longitudinal axis coaxial with a central longitudinal axis of one of said bone screw receiving holes.

586. The plate system of claim 573, wherein said at least one upper facing surface of said trailing end of at least one of said bone screws is at least in part curved.

587. The plate system of claim 573, wherein said at least one upper facing surface of at least one of said bone screws is at least in part in a plane that crosses the central longitudinal axis of at least one of said bone screws.

678. A plate system adapted for use in the anterior human cervical spine for contacting the anterior aspect of at least two cervical vertebral bodies, said plate system comprising:

a plate having a longitudinal axis and a length sufficient to span a disc space and overlap portions of at least two adjacent vertebral bodies, said plate having a lower surface for placement against the vertebral bodies and an upper surface opposite said lower surface, said lower surface of said plate being concave along a substantial portion of the longitudinal axis of said plate;

at least two bone screws each having a central longitudinal axis and being adapted to engage each of the at least two vertebral bodies, respectively, each of said bone screws having a leading end for insertion into the vertebral bodies and a trailing end opposite said leading end, said trailing end having at least one upper facing surface oriented toward said upper surface of said plate and a

592. The plate system of claim 591, wherein said shank is tapered along at least a portion of its length.
593. The plate system of claim 573, wherein at least one of said bone screws has a thread having a thin profile and a sharp crest.
594. The plate system of claim 573, wherein at least one of said bone screw receiving holes is threaded.
595. The plate system of claim 573, wherein at least one of said bone screw receiving holes is configured to form an interference fit with one of said bone screws.
596. The plate system of claim 573, wherein at least a first pair of said bone screw receiving holes is oriented in said plate to overlie the anterior aspect of a first cervical vertebral body and at least a second pair of said bone screw receiving holes is oriented in said plate to overlie the anterior aspect of a second cervical vertebral body.
597. The plate system of claim 596, wherein said bone screw receiving holes of at least one of said first and second pairs of bone screw receiving holes are generally arranged in side-by-side pairs.
598. The plate system of claim 573, in combination with an interbody implant.
599. The plate system of claim 573, in combination with a bone graft.
600. The plate system of claim 573, in combination with a bone growth promoting material.
601. The plate system of claim 600, wherein said bone growth promoting material is at least in part other than bone.

surface oriented toward said upper surface of said plate and a bottom surface opposite said top surface oriented toward said lower surface of said plate;

at least two bone screw receiving holes extending through said plate from said upper surface to said lower surface, at least a first of said bone screw receiving holes adapted to overlie a first of the vertebral bodies and at least a second of said bone screw receiving holes adapted to overlie a second of the vertebral bodies, each of said bone screw receiving holes being configured to prevent said bottom surface of said trailing end of said bone screw from protruding below said lower surface of said plate; and

a plurality of locking elements each adapted to lock to said plate only one each of said bone screws inserted into one each of said bone screw receiving holes, said locking elements each having a central longitudinal axis that passes through one of said bone screw receiving holes, respectively, to retain said one of said bone screws to said plate.

- 679. The plate system of claim 678, wherein said lower surface of said plate is concave at least in part transverse to the longitudinal axis of said plate.
- 680. The plate system of claim 678, wherein said lower surface of said plate is flat at least in part transverse to the longitudinal axis of said plate.
- 681. The plate system of claim 678, wherein at least one end of said plate is configured to cooperatively engage a compression tool for movement of at least one vertebral body toward another vertebral body during installation of said plate.
- 682. The plate system of claim 678, further comprising an access opening in said plate for accessing at least one vertebral body with a compression tool for

bottom surface opposite said at least one upper facing surface oriented toward said lower surface of said plate;

at least two bone screw receiving holes extending through said plate from said upper surface to said lower surface, at least a first of said bone screw receiving holes adapted to overlie a first of the vertebral bodies and at least a second of said bone screw receiving holes adapted to overlie a second of the vertebral bodies, each of said bone screw receiving holes being configured to prevent said bottom surface of said trailing end of said bone screw from protruding below said lower surface of said plate; and

a plurality of locking elements each adapted to lock to said plate only one each of said bone screws inserted into one each of said bone screw receiving holes, said locking elements each having a central longitudinal axis that passes through one of said bone screw receiving holes, respectively, to retain said one of said bone screws to said plate, said locking element each having an outer perimeter contacting at least a portion of the perimeter of one of said bone screw receiving holes, said locking elements each having an upper surface, a lower surface opposite said upper surface, and a through-hole passing through said upper surface and said lower surface, said through-hole having a central longitudinal axis coaxial with a central longitudinal axis of one of said bone screw receiving holes, and at least one of said locking elements being above said bottom surface of said trailing end of said bone screw.

691. The plate system of claim 678, wherein said at least one upper facing surface of said trailing end of at least one of said bone screws is at least in part curved.

691. The plate system of claim 678, wherein said upper surface of said trailing end of said bone screw is at least in part curved.
692. The plate system of claim 678, wherein said upper surface of said bone screw is at least in part in a plane that crosses the longitudinal axis of said bone screw, said at least one locking element contacting said upper surface of said bone screw.
693. The plate system of claim 678, wherein the trailing end of at least one of said bone screws is configured to cooperate with said at least one locking element to lock said bone screw to said plate.
694. The plate system of claim 678, wherein at least one of said bone screws has a head dimensioned to achieve an interference fit with a respective one of said bone screw receiving holes.
695. The plate system of claim 678, wherein at least one of said bone screws is configured to be self-tapping.
696. The plate system of claim 678, wherein at least one of said bone screws has a tip at said leading end and a head proximate said trailing end, a shank therebetween, and a thread having a substantially constant crest diameter along a substantial portion of the length of said shank.
697. The plate system of claim 696, wherein said shank is tapered along at least a portion of its length.
698. The plate system of claim 678, wherein at least one of said bone screws has a thread having a thin profile and a sharp crest.



699. The plate system of claim 678, wherein at least one of said bone screw receiving holes is threaded.
700. The plate system of claim 678, wherein at least one of said bone screw receiving holes is configured to form an interference fit with one of said bone screws.
701. The plate system of claim 678, wherein at least a first pair of said bone screw receiving holes is oriented in said plate to overlie the anterior aspect of a first cervical vertebral body and at least a second pair of said bone screw receiving holes is oriented in said plate to overlie the anterior aspect of a second cervical vertebral body.
702. The plate system of claim 701, wherein said bone screw receiving holes of at least one of said first and second pairs of bone screw receiving holes are generally arranged in side-by-side pairs.
703. The plate system of claim 678, in combination with an interbody implant.
704. The plate system of claim 678, in combination with a bone graft.
705. The plate system of claim 678, in combination with a bone growth promoting material.
706. The plate system of claim 705, wherein said bone growth promoting material is at least in part other than bone.
707. The plate system of claim 705, wherein said bone growth promoting material is at least in part bone.
708. The plate system of claim 705, wherein said bone growth promoting material includes at least one of bone morphogenetic protein, hydroxyapatite, and hydroxyapatite tricalcium phosphate.

692. The plate system of claim 678, wherein said at least one upper facing surface of at least one of said bone screws is at least in part in a plane that crosses the central longitudinal axis of at least one of said bone screws, said locking elements contacting said at least one upper facing surface of one of said bone screws.

713. A plate system adapted for use in the anterior human cervical spine for contacting the anterior aspect of at least two cervical vertebral bodies, said plate system comprising:

at least one plate having a longitudinal axis and a length sufficient to span a disc space and overlap portions of at least two adjacent cervical vertebral bodies, a lower surface for placement against the cervical vertebral bodies, said lower surface being concave along a substantial portion of the longitudinal axis of said plate, and an upper surface opposite said lower surface;

at least two bone screws each having a central longitudinal axis and being adapted to engage each of the at least two cervical vertebral bodies, respectively, each of said bone screws having a leading end for insertion into the cervical spine and a trailing end opposite said leading end, at least one of said bone screws proximate said trailing end having at least one upper facing portion oriented toward said upper surface of said plate and a lower portion opposite said at least one upper facing portion oriented toward said lower surface of said plate, said at least one upper facing portion including a contact surface area at least in part in a plane that crosses the central longitudinal axis of said bone screw;



720. (Amended) The plate system of claim 713, wherein at least one of said locking elements is generally circular and the central longitudinal axis of said locking element is the rotational axis of said locking element, the rotational axis being coaxial to the central longitudinal axis of one of said bone screw receiving holes when said locking element is inserted in said bone screw receiving hole.
721. (Amended) The plate system of claim 713, wherein at least one of said locking elements is at least in part circular.
722. (Amended) The plate system of claim 713, wherein at least one of said locking elements has at least one wedged surface.
723. (Amended) The plate system of claim 713, wherein at least one of said locking elements comprises at least one of a screw and a cap.
724. (Amended) The plate system of claim 713, wherein at least one of said locking elements comprises at least one of a camming surface, a ramped surface, and a threaded portion.
725. (Amended) The plate system of claim 713, wherein at least one of said locking elements does not substantially protrude above said upper surface of said plate.
726. (Amended) The plate system of claim 713, wherein said upper surface of said trailing end of at least one of said bone screws is at least in part curved.
727. (Amended) The plate system of claim 713, wherein said upper surface of at least one of said bone screws is at least in part in a plane that crosses the longitudinal axis of at least one of said bone screws, said locking elements contacting said upper surface of one of said bone screws.



728. (Amended) The plate system of claim 713, wherein said contact surface area of at least one of said bone screws is at least in part in a plane that is perpendicular to the central longitudinal axis of said bone screw.
729. (Amended) The plate system of claim 713, wherein said contact surface area of at least one of said bone screws is at least in part arcuate.
730. (Amended) The plate system of claim 713, wherein said contact surface area of at least one of said bone screws is at least in part flat.
731. (Amended) The plate system of claim 713, wherein said contact surface area of at least one of said bone screws is at least in part at an angle to the central longitudinal axis of said bone screw.
732. (Amended) The plate system of claim 713, wherein the trailing end of at least one of said bone screws is configured to cooperate with one of said locking elements to lock said bone screw to said plate.
751. (Amended) The plate system of claim 713, wherein at least a portion of one of said plate, said locking elements, and said bone screws is a bioresorbable material.

#### **REMARKS**

Applicant has amended claims 282, 285-287, 538, 543, 545-553, 572, 573, 578, 580-588, 607, 608, 613, 615-623, 642, 643, 648-658, 673, 674, 677, 678, 683, 685-693, 712, 713, 718, 720-732, and 751 to further define Applicant's claimed invention.

Applicant submits that all of the pending claims are patentable over the art of record.



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In re U.S. Patent of: )  
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CERVICAL PLATING SYSTEM )

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P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

**CERTIFICATE OF MAILING VIA FIRST CLASS MAIL**

Date of Deposit: July 31, 2003

I hereby certify that:

1. Request for Certificate of Correction with attachments
2. 2 pages of Form PTO-1050 (in duplicate)
3. Self-addressed return postcard receipt

are being deposited with the United States Postal Service to Addressee with sufficient postage as first class mail under 37 C.F.R. § 1.8 on the date indicated above and are addressed to:

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Date: July 31, 2003

  
Sandra L. Blackmon

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Hartville, Ohio 44632  
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Facsimile: 330-877-2030

**CERTIFICATE OF CORRECTION**

PATENT NO: 6,592,586  
DATED: July 15, 2003  
INVENTOR: Gary K. Michelson

(Page 1 of 2)

It is hereby certified that an error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 30, line 65:

Delete "fig".

Column 35, line 18:

After "43," insert --in--.

Column 40:

Line 38: change "holes" to --holes, said locking elements each having a central longitudinal axis that passes through one of said bone screw receiving holes, respectively, to retain said one of said bone screws to said plate, said locking element each having an outer perimeter contacting at least a portion of the perimeter of one of said bone screw receiving holes,--;

Line 44: delete "said locking elements";

Lines 45-49: delete in their entirety;

Line 50: delete "of one of said bone screw receiving holes,"; and

Line 59: change "herein" to --wherein--.

Column 41:

Line 40: change "hole" to --holes--;

Line 48: change "146" to --166--; and

Line 58: change "herein" to --wherein--.

Mailing Address of Sender:  
Martin & Ferraro, LLP  
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PATENT NO: 6,592,586  
DATED: July 15, 2003  
INVENTOR: Gary K. Michelson

(Page 2 of 2)

It is hereby certified that an error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 42:

- Line 1: after "148," insert --in--;
- Line 41: delete "including";
- Line 44: delete "oriented toward said upper surface"; and
- Line 45: delete "of said plate and a lower portion".

Column 43:

- Line 27: change "east" to --least--;
- Line 35: change "treaded" to --threaded--; and
- Line 61: change "claims" to --claim--.

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INVENTOR: Gary K. Michelson

(Page 1 of 2)

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**CERTIFICATE OF CORRECTION**

PATENT NO. : 6,592,586 B1  
DATED : July 15, 2003  
INVENTOR(S) : Gary K. Michelson

Page 1 of 2

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 30,

Line 65, delete "fig".

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Line 18, after "43," insert -- in --.

Column 40,

Line 38, change "holes" to -- holes, said locking elements each having a central longitudinal axis that passes through one of said bone screw receiving holes, respectively, to retain said one of said bone screws to said plate, said locking element each having an outer perimeter contacting at least a portion of the perimeter of one of said bone screw receiving holes, --;

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Column 41,

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Line 61, change "claims" to -- claim --.

Signed and Sealed this

Twenty-first Day of October, 2003

A handwritten signature in black ink, appearing to read "James E. Rogan", with a horizontal line drawn underneath it.

JAMES E. ROGAN  
*Director of the United States Patent and Trademark Office*